

1892
PRICE 25 CENTS

R · M · KELLOGG'S

GREAT CROPS ^{OF} SMALL FRUITS



And How He Grows Them

Being the Improved Methods of Propagating Plants and Incre
Vigor, as well as of General Cultiva on the

Rushire Fruit Farm, I Mich.

One of the Largest Plantations of Small Fruits

Michigan.

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WHY WE WROTE THIS PAMPHLET.

Long experience and careful study has convinced us that for the want of proper information on the subjects discussed in this book a vast amount of labor is thrown away and many failures and bitter disappointments follow. In the case of animals, seminal weakness and consequent degeneration has become pretty well understood, but we assert that scarcely one fruit grower in a hundred has ever dreamed it had anything to do with the failure of his trees, vines and plants to produce fruit.

An extended conversation with farmers generally will show there is the greatest ignorance as to the sexuality in the vegetable kingdom. Their attention has not been called to it, and they have not given it a moment of thought.

Year after year they plod along, trying to make their

IMPOTENT PLANTS

respond to their labor, and reap nothing but bitter disappointment. We believe the ideas advanced in these pages are correct and of the most vital importance, and that they have not received the consideration they deserve. If we are to succeed we must

KNOW THE CAUSES

that produce the effects.

We have made phenomenal progress during the last twenty years in fruit growing, and this is very largely due to dissemination of information, and there is room enough for all in working out the many yet unsolved problems. There should be

NO SECRETS KEPT

that will benefit mankind, but we must hasten to give our co-workers the advantage of our new discoveries, receiving in return that which is more valuable than money—the thanks of a grateful people.

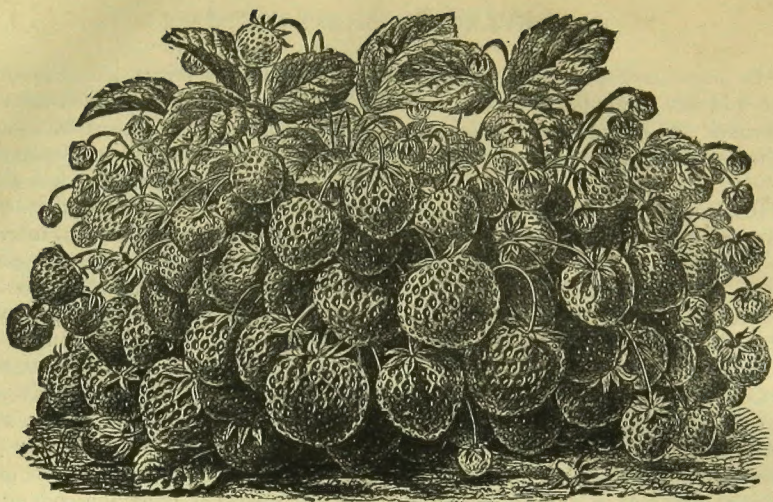
I do not claim to have discovered the best possible way of doing everything; circumstances must govern in a great degree. We tell you in the following pages how we prefer to do these things, and if you have a better way please write us and say how you do it, and we will pay you for your trouble. We purchase a large amount of labor in conducting our farm operations and can well afford to pay for information that will enable us to make it accomplish the most in the best way.

If this Booklet shall go out and awaken a new interest in fruit growing which shall cause several berries to grow where one grew before, I shall be happy indeed. We believe the time is near at hand when our people will not spend their time in cultivating a plant that

PRODUCES NO FRUIT.

That they will investigate the cause, and if that cause cannot be removed they will not permit it to cumber the ground. We should learn that there never was an effect without a cause.

If my literary style should become the subject of criticism, I beg to say I am not a literary man. I am a farmer, yet an enthusiastic student of horticulture. I shall continue my investigations, and during the coming year hope to enlarge this work and present some new and valuable features, and you are cordially invited to send me any suggestions you can. This book has been copyrighted. Parties copying for catalogue purposes will be held responsible.



A PEDIGREE PLANT.

IMPROVEMENT OF SMALL FRUIT PLANTS BY SELEC- TION.

THE following paper was read by R. M. Kellogg at the annual meeting of the State Horticultural Society:

William Steele, whose farm adjoins mine, paid \$6,600 for a two-year-old heifer which had never given milk, nor was there any absolute certainty that she would make a successful breeder. It was not a "blind" sale, for it occurred at the Chicago Fat Stock show, and there were present a large number of the best stockmen in the country, and the bidding was very spirited until Mr. Steele secured the prize at the price named.

It might be profitable for purposes of comparison to study the history of this animal and learn the reason for attaching so much value to her. She was the ideal type of one of the most illustrious families of the Short Horn. Her ancestors on both sides for many generations had been uniformly the greatest prize takers at the largest stock shows in this country and Europe. There had not been a single break, and matings had been made with the greatest care that even the slightest defects might be eliminated from the offspring. Her registered pedigree on both sides went back into the last century, so that all probability of reversion or taking on defects of remote ancestors had been removed. The offspring of these

famous animals were valued away up in the thousands, having been sold as high as \$42,500, and at these fabulous figures were enormously profitable. Their real worth as breeders is not questioned. No successful stock breeder thinks of touching an animal until he thoroughly investigates its pedigree, for it is conceded by all that the same care will produce a much larger percentage of clear profit than common scrub stock.

Now, **Plants are Male and Female** and are governed by all the laws that obtain in the breeding of animals. The organs of reproduction are as perfect in the one as in the other and are as much improved by selecting perfect specimens for mating. Plants are subject to disease and transmit their constitutional weaknesses with as much certainty as do animals, and manifest as great tendency to revert and take on defects of ancestors.

Cross-fertilization and bud variation are the methods of producing new varieties. All planters know that from the same seed the greatest variation of form, color and productiveness are constantly developing. Now let us look for a moment at the treatment animals and plants receive at all our fairs. An animal, to be famous as a breeder, must be a great prize taker, and must be passed upon by eminent judges and pronounced perfect in all points. The first premium always means superiority over all competitors for breeding or some special purpose. If a breeding animal and a universal prize taker and offspring is

known to be superior his services command large sums and are sought for by the most skillful breeders. The premium is awarded to the individual and not to the class to which he belongs.

Look at the Prize-Winners in horticulture. They go through their orchard picking a specimen from this tree and that until the collection is made. The tree that is loaded year after year with the finest fruit, true to type, high in color, rich in flavor, its perfect foliage and smooth trunk indicating perfect health, and has stood the blasts of our severest winters is entirely ignored in your awards. The same is true of the vine or plant standing among its commonplace fellows and yielding the most magnificent fruit, veritable sweepstakes at your meetings, but the vines or plants, as individuals, are entirely ignored. They die in oblivion. I do not believe there is a commercial nurseryman in America to-day who seeks out these trees and plants and makes a special feature of propagating from them. We admit there are some seedsmen who have practiced selection until they have acquired a world-wide reputation for their skill in improving known varieties. In the case of trees I believe it is a universal rule of nurserymen to take scions from nursery rows or any tree most convenient of the variety desired. Downing points out clearly that a graft from a diseased or weak tree will transmit the disease or weakness to the healthy stock, even if grafted a dozen times in quick succession. I believe this has more to do with the failure of orchards than any other cause. The truth is, the nursery business has degenerated into a mere speculation; the winning man being the one who can sell stock the cheapest. Year after year the strawberry grower goes into his fruiting beds and digs up plants between the rows where they have stood unprotected, freezing, thawing and heaving, under water or dried by the winds of winter until their constitutional vigor is utterly destroyed.

What is the Result? Go into the field at harvest time; the first few feet of a row is loaded with fine fruit, the next has scarcely any, and then follows a vacancy where the plants have not vitality enough left to grow, and so on through the whole field, the soil, fertility and cultivation being all the same. Why is this? The mother plant from which

the first came was strong and vigorous; in the second instance the vitality had been lost, perhaps through the process of bud variation or reversion, or quite likely the plants had been taken from an old exhausted bed where seedlings had come up. I do not know of another grower whose plants are not more or less mixed with seedlings or spurious plants. No attention whatever is paid to selection.

Bud Variation has become generally recognized. Many of our most valuable varieties are nothing but sports (bud variations). Thus the Golden Queen raspberry is a sport of the Cuthbert. During the past season I found in the boxes, while marketing, berries partly red and partly yellow, the red part being identical with Cuthbert. I hope the coming season to find the canes on which these berries grew, that I may experiment with them. The Boston nectarine is conceded to be a sport from the peach. The cases are numerous and I need not dwell on them.

The clamor is heard from one end of the country to the other for something that will equal the old Wilson's Albany of 30 years ago. Where the **Wilson Has Been Kept Pure** by careful selection it has no equal among the perfect flowering sorts of to-day. I have nothing on my farm that will approach it, and I have tried pretty much everything offered. Wherever the Wilson has failed, you will find on careful investigation that no effort has been made to preserve its purity. I speak of it as a perfect flowering variety. I admit the Crescent is more vigorous and more productive, but like the Wilson and for the same reason has been given a back seat by many growers. As a cash bag filler these two are yet the champions. They have made more money for the grower than all other varieties put together, where they have been kept pure by proper selection.

A pedigree plant may be said to be one which possesses the best points of its variety in the greatest perfection, with ability to transmit these characteristics to its offspring. The want of fixedness of the desirable features in our new varieties is the cause of failure when they pass out of the hands of the originators. Their changed conditions and different methods of cultivation render the bud variation so great that for the want of proper selection and exclusion of inferior plants their value is lost.

No one can estimate the loss to fruit growers from this cause. The fact is we have gone wild over the introduction of new seedlings. They come upon us with such a flourish of printers' ink and lithographic art that we are utterly bewildered. Our fruit lists are altogether too long. There is no earthly reason for continuing one-quarter of the varieties we now have. We have not made the substantial improvements we should have made if we had devoted more time to the accumulation of the good qualities of the old standard sorts by propagating from those that produce the prize takers, ever bearing in mind that the value of pedigree in plants, as in animals, is in the long continuance of its most valuable characteristics, that the tendency to variation and reversion may be as nearly destroyed as possible. I do not mean to say we should discontinue all efforts in the direction of producing new varieties, but the proper testing of them is altogether too expensive. It should be relegated to the government experiment stations and those who can afford to do it.

But to the practical part. How shall we make these selections?

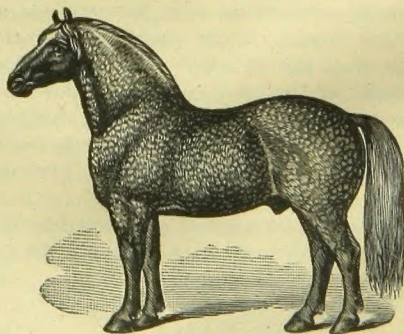
My method has been to study the variety until I had a true ideal of the type to work from; study the berries in the boxes, on the vines, the foliage and its habits. Fix it firmly in the mind, then go into the fruiting field to look for this ideal plant. Discard all plants showing any attacks of fungi or disease. If the variety is deficient in foliage, fruit too soft or has not the desired form, select with a view of correcting these deficiencies. In the case of strawberries, as soon as the berry is sufficiently developed to reveal its true character, remove the fruit that the plant may not be weakened, stimulate it gently with liquid manure, and pot every runner and remove them to a bed specially prepared for the purpose. Next year use only plants from this special bed, and select from the fruiting field as before. Never take a single plant to the field not perfect in all respects, nor use the tip plants from between the rows. They are nearly always weakened. Keep the propagating bed carefully mulched during the winter. You will be surprised at the uniformity of fruit, its color and size, as well as the prices you will command. In the case of varieties propagated by root cuttings, when you have found your ideal of fruit and

bush mark it, do not allow it to overbear and at the proper season take up the roots carefully, cutting in proper lengths, put them through a callousing process and plant in nursery rows. Never use a sucker. They are often sent up as a result of disease or injury. If the variety be propagated by tips, be especially careful that nothing gets into the ground save those perfect in all respects.

Thus we are able to augment the good qualities by securing all variations in the desired direction and discard defects every year as they appear until we have the highest perfection. I have succeeded by this method in making very marked changes in foliage and firmness and greatly increased productiveness.

Much patience and long experience will be required, but the compensation will be ample. By pursuing this course we shall be able in a very great degree to solve the problem of diseases. Weak and sickly plants are always the first to succumb to attacks of vermin and fungi. We can produce such a healthy growth that insects are powerless to injure and fungi held in abeyance. If we add to this the burning over of strawberry beds every year or plowing them under after one picking, the pests which ruin so many plantations will disappear. Cultivate thoroughly, fertilize thoroughly, study the business thoroughly and you will be thoroughly successful.

THOROUGHBREDS.



As early as the year 1780 the French government began a regular and systematic effort to improve the horses of the country, with a view of increasing the efficiency of the cavalry service; and this fostering care has continued to the present time.

The work was placed in the hands of a com-

mission of expert horsemen, and a law passed imposing severe penalties on any farmer who should use any male horse for breeding purposes without it having passed a rigid examination by this commission. The standard was at first placed very high, and requirements of excellence steadily advanced as the stock became more improved. The government made large appropriations and sent its agents into every foreign country to purchase fine specimens, and they were imported into every parish of that country and their use allotted breeders at a very small fee. A regular system of crossing breeds was instituted to secure horses for special purposes, until today France has the finest stock of all-purpose horses in the world, and the amount of gold flowing into that country from other nations for horses for breeding purposes is simply enormous. One breeder and importer in this country alone is reported to have paid France over two million dollars for this stock. We have only to consult the advertising columns of our stock journals to form a slight conception of the magnitude of these importations.

Had this country exercised the same care in excluding inferior stock from breeding, we should not have had our streets filled with the miserable scrubs that infest our farms.

So, too, if our nurserymen had practiced the same care in selecting perfect specimens of vigorous thoroughbreds for propagating, we should not now see our fields infested with the miserable scrubs that pass for orchards, and our time would not be spent in cultivating plants which are incapable of producing fruit. Selection is the basis of all improvements either in plant, seed, or animal kingdom. When the highest points of excellence are wanting, it should be discarded for all breeding or propagating purposes.

Like begets like, and if we propagate from scrubs we shall harvest scrubs, and this is as true of plants as of animals.

THE FAILURE

of berry growers in a large majority of cases is caused by the

Seminal Weakness

of their plants. If you will visit the beds of your neighbors at fruiting time, you will be struck with the unevenness of their crop.

Examine carefully and you will find hundreds of plants

Not Bearing Fruit,

and these plants will generally be found unfruitful the year following. This may be caused by an injury from insects or slovenly or harsh cultivation injuring the roots of the plants, or there may be something in the soil which renders them very susceptible to all kinds of rust and growths of fungi so that varieties peculiarly weak in this respect will not succeed. Such soils are very rare; not one piece of land in a hundred will refuse to yield large crops of any kind of small fruits where large crops of corn, potatoes and other farm crops are raised. Some varieties will do splendidly on one piece of ground which if removed to another piece on the same farm will be almost worthless. You must experiment and find what kinds do best with you. The varieties which succeed over the greatest area of the country are always the safest to plant, but it pays largely to test in a small way the new sorts that come to you properly recommended.

Plants, like animals, when once utterly exhausted by seminal effort will

Never Fully Recover.

You will bear in mind that seminal weakness is caused by *maturing seeds*. The flesh of the fruit is merely the receptacle for the seeds to grow in and is not exhausting to the plant.

A Test.

Select a plant loaded with the largest number of berries, without regard to size, each containing the largest number of seeds. You will notice it makes no effort to throw out runners but puts its whole energy into maturing these seeds. Now watch it closely and you will observe that after the fruit has ripened the

Plant will Die

of sheer exhaustion, excepting a spark of life left in the crown. After a while it will begin to revive and new roots will form above the old ones and new leaves will appear. Now enrich the ground and give it every chance possible and it will again attempt to

Propagate its Species

by throwing out an immense number of small

spindling runners, literally covering the ground with plants. Carefully watch it next season and you will find very little fruit on either the mother plant or its runners. If the runners had been kept off it might have been induced to grow a few berries, but never a good crop. The point is, we want to know the value of these plants for setting out a new bed. Treat them as carefully as you may and you will find they will continue to make foliage but

Little Fruit.

You understand by a good crop I do not mean forty to sixty bushels per acre, which is the average, but from two to four hundred bushels and upwards per acre.

Occasionally you will find a plant whose tendency to grow only foliage has been checked and has become strengthened seminally and turns to the production of fruit buds, and if these are skillfully selected and not allowed to overbear, its fruitfulness may be restored so as to bear a medium crop.

For a Second Test,

let us take a plant which has never been allowed to bear fruit and is literally loaded with the largest, finest green fruit. I wish to emphasize the words *green fruit*, for seminal exhaustion does not take place until the seed forming process begins. Now cut the fruit off and throw it away. Give it the same care and cultivation and it

WILL NOT DIE

as in the first instance, but will with renewed vigor throw out large, strong runners, making stocky plants, and in the fall you will find the crowns a mass of fruit buds; as already explained, until seminal exhaustion takes place the plant will strive to reproduce itself by formation of seeds and to do this in the greatest perfection it must produce magnificent fruit. A plant will

Never Exhaust Itself

in producing runners because it is a part of its foliage. A strawberry runner is in no sense a seed. It is only a bud and a part and parcel of the original plant. It has the same blood and carries with it all its constitutional defects and weaknesses, and if the parent plant has been exhausted by re-production (producing seeds) it will now give its energy to producing runners and foliage and produce very little fruit.

To Illustrate Further

take an apple tree, one of our favorite varieties that has been allowed to overbear until nearly dead, having been loaded with an immense number of very small, gnarly apples year after year. Now cut scions from it and graft on strong, healthy stock and re-graft a number of times as fast as possible from these grafts and see if you can produce a tree that will bear equally well with one grafted from a tree

Bearing Prize Takers

and in full vigor. I do not believe it can ever be done.

A Further Test.

It is well known that grape vines if not pruned will exhaust themselves in a very few years. If left unmolested they will set more fruit than they can mature.

Take two strong plants from vines that have never been allowed to overbear. Prune one of them closely and allow it to set no fruit till say the fourth year and then only three or four clusters. After it comes to full bearing prune back to twenty or thirty buds and thin out any thickly set clusters. The fruit will always be rich and high flavored and plenty of it.

Now let the second vine receive the same cultivation but no pruning or thinning of fruit. Let it bear heavily the second or third year. It will soon have broken clusters and poorly flavored fruit. After seven or eight years commence pruning and see if you can bring it up to the vigor and fruitfulness of the first vine. *You can't do it.* If you propagate from the second vine you can tell the difference in fruitfulness from the cuttings taken from the first vine as far as you can see them. They will not last as long and the fruit will be in every way inferior. Try it.

Did you ever stop to think that after so many years of cultivation and multiplication there is only

One Wilson's Albany Plant.

All the plants now scattered over the world are only the buds of the original seedling. The same is true of the Baldwin apple, Bartlett pear and all other kinds of fruit propagated by buds or grafts.

It is a Positive Fact

that many nurserymen are flooding the country

with weak and sickly plants from stock exhausted as before explained. They are more profitable because they throw their whole energy into making runners. A heavy fruiter throws its strength into the formation of fruit buds and makes comparatively few runners.

More New Seedlings

are destroyed by allowing them to overbear in their infancy than from any other single cause. When Wilson's Albany had set its first fruit if it had been allowed to overbear and runners sent out from these plants, do you suppose it would have revolutionized strawberry growing as that variety has done? Not at all. In all probability it *never* would have been heard from. Fortunately it fell into the hands of a man who knew just how to handle and strengthen it, and the world at large has been the gainer by his care and forethought. You will also observe that plants which have never been seminally exhausted except with a very few free-growing varieties,

Will Not Produce Runners,

more than are required for fruiting, and only need thinning where they happen to get thrown together too closely by the cultivator. On the other hand, plants which have once been allowed to be thus exhausted will throw their *energy into runners* and foliage, and the amount of labor required to keep them properly thinned is very great.

THE PROPAGATING BED

is of the utmost importance. It is almost impossible to maintain full vigor and purity of plants when taken indiscriminately from between the rows of a fruiting field. The plants for setting the propagating bed should always be taken each year from plants selected from the fruiting field as explained in the first article, that we may know that it is a strong fruiter, and the greatest pains should be taken to encourage every good quality and discourage objectionable points, that every berry should be as perfect as possible, and all blossoms should be picked off as they appear. The cost of plants is a very small part of the expense of growing a bed of strawberries, and if your plants have ceased to bear from two to four hundred bushels per acre after having been

carefully cultivated, you should secure pure plants from some one who has them, or at least enough to start a propagating bed of the varieties you intend to grow.

The soil should be a sandy loam, made rich and worked very deep to give the roots the best chance possible, and where they will have plenty of moisture. If the whole bed is taken up every spring, there is no danger of white grubs, as the foliage will not become thick enough to attract the beetles till after they have laid their eggs.

MIXING PLANTS.

They mix the same way corn and oats would mix if turned into a bin. They never lose their individuality, no matter how long they are allowed to run together. The operation is only mechanical. If the seeds in the fruit are planted from beds mixed in this way you would have entire new plants. Of course they would retain some of the characteristics of the parent plant, but you would stand less than one chance in five hundred to get an improvement on our old established varieties.

SHIPPING PLANTS.

The distribution of plants has been greatly facilitated by the reduction of postage to eight cents per pound and low rates offered by express companies, especially on dozen and hundred plants. Spagnum moss does not permit the roots to dry up or in any way lose their vitality, but they can be sent to any part of the country with perfect safety. As soon as possible after the receipt of plants drop them in water, not too warm, for a few minutes and then, if you are not ready to set out at once where they are to remain, bury their roots in moderately moist earth and see that the dirt comes in contact with every root.

Don't soak the ground and then let it lay and bake. Keep the plants shaded. They should be set in the place they are to occupy as soon as possible, as the roots will commence growing and the plants checked by again taking up and resetting. They should not be allowed to remain in the bundle very long for they will be liable to heat, nor should the roots be allowed to get dry under any circumstances. The natural place for the roots of plants is in the ground and you must see that they get there as quickly as possible.

WILL IT PAY ME

to engage in the business of fruit growing? I could, perhaps, answer this more intelligently if I was personally acquainted with your peculiar traits and general make up. Circumstances govern but you must be a Napoleon and *make* circumstances.

If you are willing to play second to everybody else and comply with all the conditions of failure you will not get very rich. If you are willing to spend your time cultivating for thirty to fifty bushels per acre of small second class berries, with which you will always find the market glutted, I tell you most emphatically

[No, It Will Not Pay.]

If you are one of those energetic, pushing, investigating, painstaking fellows who comply with the conditions of success you will do as hundreds of others have done, have a good fat living and even get rich at it. The man who grows

Big Berries and lots of them,

as he can easily do if he follows the directions pointed out in this book, does not have to hunt for a market for all he can grow but the market will hunt him.

He has everything engaged long before it is ready for the market. No matter where he ships they soon spot his goods. He always gets his price without bickering. This was illustrated by a purchaser who went into a commission house on Water street in Chicago last season and was directed to different shipments priced at \$2.50 to \$3.00 per case. What are those? Inquired the purchaser, pointing to another consignment. Those are \$4.50 per case. Let me see them said the purchaser. You don't need to see them, sir, they were packed and shipped by Parker Earle. That is satisfactory I will take them. Parker Earle is now reputed to be a millionaire and the largest berry grower and shipper in America if not in the world and this illustrates the whole secret of his success.

Money may make the mare go but it takes a *man* to make the fruit grow. You know more about yourself than I do, therefore you must answer your own question.

Developing a Home Market.

The great secret of developing a home market lies in getting every family in town to eat

several quarts of fruit daily instead of one. It is utterly astonishing how much fruit people will use in the course of the season if you manage them rightly. If they get tired of one variety, have another of different color, flavor and appearance for them to try. Don't allow them to think

They Can go Without

for a single meal and you will be surprised to see how quick it will cease to be regarded as a luxury but an absolute necessity. Teach them that a fruit diet means clearer heads, cooler blood and better equipose of brain and brawn and will save in many cases its cost in doctor's bills. Bear in mind it's keeping people everlastingly eating that makes a home market. You have a right to make your fruit look as

Neat and Attractive

as you please. The corners of the box should be filled up even and the points of the berries turned up, making them even and as full as they can be crated. Small berries look decidedly neat fixed in this way, and the big berries can be put in the bottom to surprise your customers when the beauties roll out of the box. They will appreciate the joke. Never offer a customer berries in an old broken or dirty box. If berries once mold in a box the spores remain in it and they will ever afterwards mold very quickly. This is especially true of raspberries.

Personal appearance goes a great way when calling on customers. The fruit should be delivered direct to the family, and it must not be mussed by rough handling. I had a fruit wagon built with side springs nearly seven feet long. It rides as easy as a boat. No matter how fast I drive my fruit is never "jumped" or bruised. It is handsomely painted and lettered in gold, and provided with a large gong bell so I can let people who do not buy regularly know I am in the vicinity, as I only call at the door of customers who purchase every day. Customers decide on what they want before I get to the door. I provide each one with a properly printed season card which they bring to the door and have their order charged, and they pay weekly. Women don't usually have change and would go without fruit if they had to pay each time; besides, making change takes a great deal of valuable time. You will need to gain the

Confidence of Customers.

When you have done this thoroughly you will find it a big stock in trade. Never sell anything to a customer that is not what they think they are paying for. Keep posted on all matters pertaining to fruit and be prepared to explain all the latest points in canning, and see that they are supplied with an abundance of each kind for that purpose. Exercise your skill as a salesman and you will soon hear more about getting fruit to supply the home market than a market for what you grow.

Berry Boxes.

We have had our boxes for many years from the large establishment of the Wells-Higman Co., proprietors of the Michigan basket works of St. Joseph, Michigan. They send out first class stock and make anything you want in the basket line.

HOW MANY CROPS

can be picked before plowing under? This all depends on circumstances. If your plantation yields from two to four hundred bushels of fine fruit you will probably never get half that again, and stand a decidedly poor chance to get a fourth of it. Of course a second crop can be raised cheaper, as you do not lose the year to raise new plants and no expense for re-setting. If the beds have been mulched and burned over as directed, and free from grass, there will be

Very Little Hoeing

required. If the soil is not rich enough to produce a good growth, fine rotted manure can easily be drawn onto the field, or an application of wood ashes can be made, and the second crop might be profitable. If you get caught with spring frosts, or for any reason you get a light crop the first season, and things are favorable, you may expect a big crop the second and third years if the plants are not allowed to make too many runners. Go through and tear them off with the hands.

The fruit will not be as large and fine as the first year. Fully three-fourths of the plantations in the west produce three crops, but the second and third rarely go over thirty to fifty bushels per acre and this does not pay to fuss with.

In the vicinity of Boston and many other large cities where land is high and a fancy

trade to cater to, it is almost a universal practice to take only one crop. We believe the grower who practices taking off only one crop, plows under and enriches his land and sets again next season, will have a better hold of the market and get the most for his work, and be much less liable to get the ground infested with insects. If the white grub don't catch you, and fertility of soil is maintained, there is no trouble in raising berries on the same land year after year, any more than corn and potatoes, but like all other crops a rotation is much more profitable if it can be done. If you raise a second crop you must set out a small bed from which to raise plants the next year. If you take plants from the bed after fruiting a very large crop, then good-bye big crops for many years.

HOW MANY BUSHEL

ought a fruit grower to expect from an acre? If his soil is rich in nitrogen and properly fed with potash and phosphoric acid as his soil requires and he is given the care in selecting plants that are heavy fruiters as explained elsewhere he ought not to get less than two hundred bushels and has good reasons to expect three or four hundred bushels per acre. In addition to this you have the right of way in selling as such a grade of fruit always has a walk away even in a glutted market. Both

You and Your Farm

will enjoy a reputation of which you may justly be proud. Such fruit always commands enough more than common fruit to pay all extra intelligently directed work and will leave more than the ordinary crop for a

Clear Profit.

As ordinarily grown strawberries will not average over fifty to sixty bushels to the acre and many acres do not grow thirty bushels of small and every way inferior berries. There is not in the general market where there is sharp competition and frequent gluts a cent of profit to the grower.

You have no more right to expect to make money by fruiting from scrub stock than a breeder expects to raise fine, large easily kept and easily fattened animals by breeding from common barnyard scrubs. As explained in the first article every disadvantage you encounter in the animal kingdom is found in propagating in the vegetable world.

HOW LONG

can we prolong the strawberry season. During the past season we had them pretty much all summer and fall. We commenced picking the first of June and closed up the Gandy July 18. Then we took a little rest till about the first of September, when the raspberries and blackberries were just out of the way the strawberries again appeared on our table "fresh from the vine," liberally supplying our family and many of our friends all through

September and October

till near the middle of November when we had a hard freeze.

We exhibited several quarts at the district fair to the astonishment of all visitors.

We insert here the following extract from the Ionia Daily Sentinel of Oct. 10:

FRESH STRAWBERRIES IN OCTOBER.

"Would you believe it if I, told you we are going to serve strawberries for dinner to-morrow," asked Herb Bailey of a guest at the Bailey house this noon.

"Certainly I would," was the reply, and the traveler added: "Why don't you buy them of my house? We will sell you any number of cases of canned fruit at wholesale rates."

But Herb wasn't talking about canned fruit, as the c. t. learned when he was shown a crate of large, ripe strawberries, grown by R. M. Kellogg in the open air, being the second crop from vines that bore a good crop in the usual season.

Tomorrow, remember the date, Sunday, October 11, 1891, a considerable number of Ionians will eat fresh strawberries, grown within a mile of this city, in the open air. It is doubtful whether a similar record was ever before made at any point in Michigan.

What Was The Cause?

The only reason I can give is the plants had been trained to produce fruit instead of foliage as explained on another page.

They were strong and vigorous and runners were kept off and carefully cultivated. A part of the blossoms were killed in the spring so while there were not so many berries they were very large making as many quarts but not having in the aggregate anywhere near as many seeds to exhaust the plants. The season was late and very favorable and they expended

their surplus energies on fruit instead of foliage. September berries have not been unusual with me although the quantity was greater this year than in other seasons. The plants not being in a great degree exhausted I expect a good crop next year.

Spring or Fall Setting.

Spring is the time to set plants for market growers. Pick off all blossoms the first year and throw the strength into the foliage. I never saw any one pick a big crop of berries until after he had raised big plants to grow them on. If you have not been able to set strawberries in the spring, get plants as early as last of August or September and set them. If ground is kept mellow they will make considerable growth and give a good many berries the first year, and if burned over and pushed, ought to give a good crop the second season. They *must* be mulched the first winter or the frost will heave them, as the roots don't get a very firm hold during the short time they have to grow.

Growers don't like to dig plants early in the fall, because in taking out one plant they destroy a great many others, and that don't pay. Raspberries and blackberries may be set in the fall, but we decidedly prefer to have them caloused during the winter as directed elsewhere, and set in the spring. When set in the fall they should have the soil heaped up around them several inches, and removed in the spring.

Insects and Diseases.

There are few fruits that suffer less from disease than the strawberry, and yet they do not entirely escape. Sometimes just as the fruit is beginning to mature a warm rain and murky weather sets in and a sort of mildew will strike the plants and do considerable harm. My experience is that these diseases do **not** strike vigorous plants. They have with me been quite able to resist all such attacks. I believe many fruit farms become infested with all kinds of spores of rusts and other fungi for the want of simple precautionary measures. I never let a bed go over for a second picking or plow it under without burning it over to kill annual weeds and insects, which should be done immediately after picking. Some of our city fancy writers call this "slovenly." Very well, I can afford to be

called slovenly so long as my whole farm is free from such pests and my neighbors stand over their rusty, insect-eaten, half-dead plants so eagerly inquiring: "How does he do it?" He does it by burning and getting a march on them in advance. My farm has *never* lost a crop, which ought to furnish some evidence that it pays. The most destructive enemy we have to contend with is the

WHITE GRUB.

It is the larvæ of the May beetle. There is no locality in this country where they do not exist. They are from one and a half to two inches long and up to $\frac{3}{8}$ of an inch in diameter, with a brownish head. Every boy who carries a fish rod knows them. The eggs are laid by a large brownish beetle during the early summer and are from three to four years in getting their full growth. The eggs are very rarely or never laid in freshly plowed land, but are found in heavy clover sod, old pastures and old thickly-matted strawberry beds. They feed on the roots of different kinds of grasses, and seem especially partial to strawberries. They take their place about one inch under the plant and cut off the roots. If it happens to be a wet season the roots will sometimes send out new ones as fast as he can eat them off, but if it is dry you will find the plants "wilting without a cause." He can move from one plant to another fast enough for all practical purposes and if there are plenty of them the plantation is soon destroyed. The only safety is to plant on land that has been cultivated two or three years. It is not safe to re-set a strawberry bed allowed to stand three or four years without rotating with other crops. A careful examination should at least be made.

The agricultural department at Washington is meeting with wonderful success in discovering and introducing other insects that feed on the eggs and larvæ of destructive insects and we shall soon learn how to fight them successfully as well as to meet and check all growths of fungi as they appear.

The present large increase of insects is not likely to continue. We have the satisfaction of knowing that

"Every louse has lesser lice
To trouble and to bite 'em,
And so on *ad infinitum*."

I believe there is a better future for fruit-growers in this respect.

Manure.

The professional fruit grower always looks ahead and applies the *coarse* manure at least two years before the plants are to be set. Plowing under coarse, unrotted manure and putting the roots in this straw destroys many plants. A drouth following is *sure* to be fatal to them. If the ground is not rich enough (and it should be very rich) I prefer to set the plants first and apply the manure afterwards between the rows, cultivating it in so as to thoroughly incorporate it with the soil, but don't let it come too near the roots.

WOOD ASHES

are the great fertilizer for all fruits. They give higher color, richer flavor, and firmer texture. They should be unleached and sown broadcast from twenty to a hundred bushels per acre. The latter on light sand and less on heavier soils. The potash and phosphoric acid become incorporated as a part of the soil and do not leach out as many suppose, but remain for years or until taken up by plants. They have a wonderful power in conserving moisture during a dry time, and a fine mechanical effect in mellowing the soil. You will bear in mind they are a very strong alkali, and must not be put on the crowns or roots. We engage from the wood furnaces in town, and buy all we can get. They are the cheapest fertilizer to be had.

HEN MANURE

is very valuable, but as generally applied does more harm than good. The only safe way is to compost it, and handle it over and mix it thoroughly with a large quantity of soil. Ground bone and phosphate are good but are are strong, and should be applied in small quantities at a time, but often. I get all the manure free my teams can draw from town, so chemical manures do not find a very large sale here. I do not think much of plowing manure down deep and leaving it there. Better use it as a top dressing.

Soil.

I do not care to spend much time on soil. The question is, is it good enough for a garden or to raise corn, wheat, etc. All the advantage accruing from drainage for these crops will help any small fruit crop.

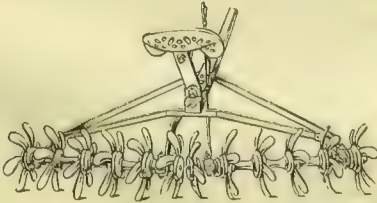
LOCATION.

A southern incline brings on the fruit earlier.

A northern incline later. Low land is more liable to be injured with frost. Cold air like water runs off into the lowest places. On my own farm on the 17th of March, 1885, at daylight the thermometer at my house on an elevation showed fourteen degrees below zero. I removed the instrument to the bottom of a narrow ravine receiving the drainage of almost the whole farm and it went down to twenty-eight degrees below zero. I could feel the cold air running over the bluff like a river while elsewhere it was very still. A few feet of elevation will often make difference enough to save a crop. It is comparative elevation that counts—that which is higher than land surrounding it.

PREPARING THE GROUND.

Properly prepare the land and the cultivating is half done. Few people appreciate the great advantage of having the ground fully pulverized to the full depth of the tillage. We want the plant to make a rapid growth from the start. The roots of plants do not enter hard lumps nor can the atmosphere enter and prepare the food for plant assimilation, besides there are always air chambers which are fatal to the roots. We must first break up and pulverize the top of the ground before we turn it down to the bottom. The tool that will do this the most effectually is the Morgan Spading harrow, manufactured by D. S. Morgan & Co. of Brockport, New York. It cuts, lifts up,



loosens and fines the soil to the depth of six inches and is a magnificent tool for the preparation of the soil for any other crop and especially for work in the vineyard and orchard. It does not lacerate the roots as an ordinary cultivator would do. Now put on the fine tooth harrow, cross and re-cross till everything is fine then put on the roller. If you have none

Make a Floater

by taking three two inch planks a foot wide

and about six or seven feet long, lap the edges so as to spike or bolt them together like lap siding and bore holes at each end so as to put in two clevises and a chain, hitching in the middle and loading with stone or standing on it making a load about as heavy as a team will draw, give the surface a good rubbing and it is ready to turn under for the roots of the plants to work in.

Now let the plow go twelve inches deep if possible. If this can't be done subsoil it by breaking up as deep as possible without bringing up the subsoil to the surface, then put on the spading harrow and follow with a fine tooth harrow as before finishing with a roller or floater leaving the ground smooth and fine and mellow clear down. It will now retain moisture and is every inch available for the roots of the plants. We must not bring up much of the subsoil at one time. Go a little deeper each year. If it has always been plowed too shallow it would be better to plow twice and return the subsoil to the bottom again. If the land is very dry or light soil it can be rolled down pretty hard; if quite moist not so much; if rather too moist use the floater and do not load it too heavy. Understand the difference between

Firming and Packing

the soil. Never do the latter. Land which has been properly firmed will always retain its moisture and plants will start to grow at once and keep at it. Heavy lands that have been packed will dry out and bake killing the plants or greatly injuring them. It is of great importance that the surface be left smooth and level.

MARKING THE ROWS.

Take a small rope, say one-half inch in diameter and the length of the field, one man at each end with a stick as long as the rows are to be apart, so as to have all the rows exactly even. We set three and one-half feet for slow growers and four feet for those having large foliage. Draw the line perfectly straight and lay it on the ground, drawing it back and forth a few inches, and the mark is quickly made. If there are ridges, slack the rope till it lays on the ground. If for any cause it will not make the mark sufficiently plain, each man takes a

hoe, rubbing the back of the edge on the rope till they meet in the middle of the field. The work can be done very rapidly.

Most growers use a marker making a furrow two or three inches wide and the same depth; it is sure to dodge around, making crooked rows, and it is impossible to tell how deep the plants should be put in; besides, the dry loose dirt is always falling in the openings for the plant. The ground cannot be harrowed through the plants, as recommended elsewhere, on account of the unevenness of the crowns, causing many times as much work as if done according to our directions.

DIGGING THE PLANTS.

The most convenient thing to carry the plants from the propagating bed to the field is a common market basket. Place a whole sheet of manilla wrapping paper in the bottom so as to hold about an inch of water, which it will readily do for several hours. Take up the plants with a four-tine spading fork and shake the dirt off the roots carefully so as not to injure roots or crowns, and remove all dead leaves, and if growth has started much a part of the green leaves should be taken off. Take a handful of plants with crowns as even as possible and cut the roots back to about five inches. A number of new roots will start out where the roots are cut off, greatly increasing their number, occupying every particle of soil, which will greatly increase their growth and vigor.

SETTING THE PLANTS.

Insert a common spade directly in the mark about seven inches deep, push it from you so as to make an opening about one inch wide,



STRAWBERRY
PLANTED TOO DEEP.

Put Wilson plants about twelve to fourteen inches apart and eighteen inches for the free-growing kinds, like Crescent, Haverland, etc.



STRAWBERRY
PLANTED TOO SHALLOW.

with the top of the ground. This is very important, as the fine teeth of the cultivator must slip around the plants when you come to cultivating. If you get the plants too deep they will rot, if not deep enough when the ground settles it will expose the roots.

Now quickly press it down so that no dry dirt from the top will fall in on the roots, and press it firmly that no air may get to the roots. We generally go back over the row and firm the ground.



RIGHT WAY OF PLANTING.

If the ground is very dry a small boy walks along, stepping beside the plant, or if the soil is moist a quick spat of the hoe will do the business. When I first practiced this a man stepped on both sides

of the plant and pressed it down hard as possible and the soil baked and many plants died.

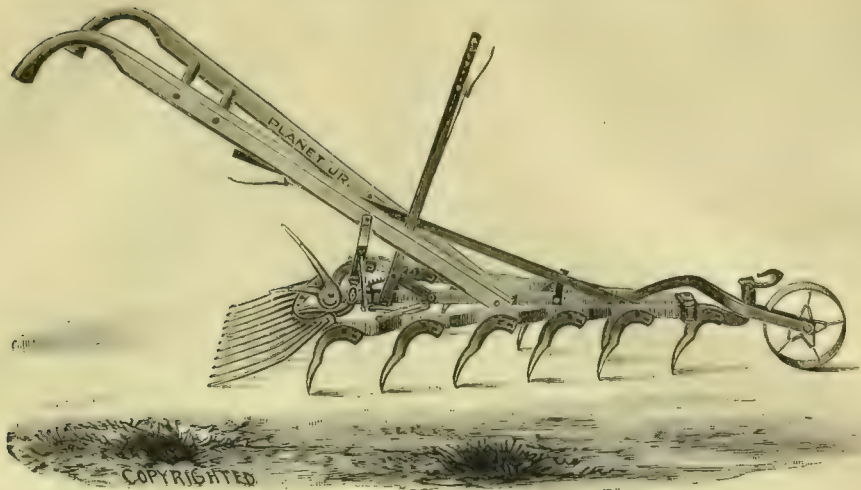


WRONG WAY OF PLANTING.

Always remember that plants delight in a mellow soil and if you get the plant in firm enough to tear off a single leaf before the plant will come out and roots have been straightened out properly and soil in contact with all of them it will pass. You can easily overdo the firming. The texture and moisture of the soil must govern in this matter.

WHY WE CULTIVATE.

Plants take all their nourishment in a liquid form. If all the fertility of the soil was at once placed in this condition we can readily see how quickly the rains would wash it all out, leaving nothing for plants to grow on.



PLANET JR. HARROW.

Nature has Provided

for its safe keeping by locking it up in insoluble forms. Now in order to unlock it gradually as the plants require we must have a resolvent and the greatest of these is the oxygen of the atmosphere. While it is the greatest of all destroyers it is also the great life giving agent. Unless it can have free access to every part of the soil plants will not grow. When a hard crust forms or it becomes baked or hard so the oxygen is excluded growth is at once suspended, hence the absolute necessity, weeds or no weeds, of frequently stirring the soil.

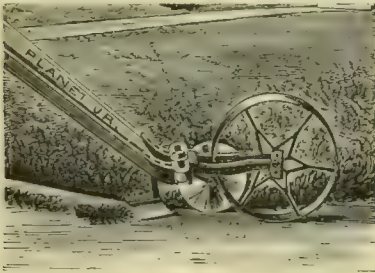
Of course weeds must be destroyed or they will absorb the strength of the soil, but if there were no weeds we should still derive the *greatest value* from cultivating.

To the thorough cultivator weeds have no particular terror. He never allows them to come above the ground. If the least disturbed just as they are coming up they will die. But when once up and established they are surely a terror. To pull them out and hoe after the weeds are half grown is to greatly injure the plants and multiply the cost of labor many times. Last year I had a piece of ground enriched heavily with manure drawn from the city with a view of setting strawberries the following year. It was planted with Hubbard squashes and cultivated as long as the vines would permit. The spring being very dry the weed seed did not germinate until the squash vines got too large for cultivation. Heavy rains

came on and the weeds got started. We were in the midst of our strawberry harvest and could not find extra help to pull the weeds out and for once I got left. In the fall we mowed them off with the scythe and raked them up. Several bushels of rag and pig weed seed with a strong mixture of pretty much everything else was left on the ground. I plowed in the fall and applied a heavy dressing of unleached wood ashes which were cultivated in. In the spring I cultivated deeply again and harrowed so as to fine the earth, then plowed so as to bring this weed seed to the surface that it might germinate as quickly as possible, and then set the plants. The second day after we started the Planet Jr. fine tooth harrow, letting the teeth slant back, and let two or three teeth go directly through the row, not over an inch deep. The teeth are only $\frac{5}{8}$ of an inch wide and of > shape. The ground was very mellow and plants had been carefully set and I did not tear out a single plant, but cut and fined every inch of the surface. The plants will dodge around the teeth very cleverly. The man holding the cultivator will not have time to watch the crows fly, but must attend strictly to business.

In a few days the ground was almost white with little weeds coming up, but the cultivator went through twice per week and they were soon all dead. In a few places some pigeon grass seed got started and we had to resort to a little hoeing. By the time we were ready to

let the runners take root the weeds were all gone. We now put on the Planet Jr. cultivator with two inch tooth, going first time close to the plant, throwing the runners around and the next time far enough away to form the row at the proper width. Let the front tooth make the mark for the tip of the runner to fall into to be covered about a half inch deep with the hind tooth so the runner will at once take root and make large plants by fall. A little practice will enable you to do this very skillfully. If the runners are allowed to remain on the top of the ground and it should continue very dry it will sometimes be weeks before they will take root, and during this time they live on the mother plant instead of having their own roots for support. New runners will rapidly form and come out between the rows. Remove the plow from your Planet Jr. lawn edger go ahead of the cultivator, cut-



[Fig. 8.]

ting off every runner, turning the cutter out wherever the plants are not thick enough. Keep the cultivator going till it freezes in the fall. In many instances the plants will form too thick even then, but we go over them and pull them out, treating them as we would weeds. They should not stand nearer than eight inches from each other.

Every runner cut off causes a new crown and fruit stem to form. It is the most profitable work you can do to go over the ground at short intervals and remove the runners. Of course this involves considerable labor, but not so much as you would think, if you go at it in time and learn to do your work with the fewest possible motions.

Cultivating vs. Mulching.

We do not hear so much about mulching of late years as we did formerly. We have discovered that the most economical mulching we

can find is the soil itself. When kept frequently cultivated to the depth of two or three inches about the plants there is nothing better and in many respects it is superior to any artificial covering, as it does not prevent the warmth of the sun from penetrating the earth and is much more economical, besides it also admits the air to the roots to prepare the plant food. The man who cultivates frequently is in fact mulching on a large scale, and the more frequently he cultivates the more successful will his mulching prove. It not only keeps the soil moist and mellow, but breaks up the capillary passages between the soil beneath and air above. It covers the ground with a soft blanket that checks the rising vapor and

Holds the Water

where it will do the most good. If however cultivating cannot be done it is absolutely necessary in many cases that the surface should be covered around trees and plants by some coarse litter. This should always be done after plants are watered during a dry time to keep the ground from baking.

Fighting the Drouth.

Did you ever notice the great drops of water collect on a pitcher filled with ice water? Where do they come from? The atmosphere of course. Then we are to understand the atmosphere is always loaded with moisture and readily condenses when it comes in contact with anything colder than the air. Heat will also draw moisture. At the close of a hot day when the top of the ground is heated and about the time the air is charged with the falling dew we start the cultivator, turning the hot dirt down to draw the moisture from the subsoil, as it will do, and bring up the cold earth for the atmosphere to circulate through and condense its moisture during the long hours of the night; we can save our crop rain or no rain.

We always cultivate our blackberries every night while picking during a drouth, (we pick twice per week) and have never failed of a splendid crop. Try it. It works like a charm.

Spring Cultivating.

When the ground is mulched we do not disturb the soil until after picking and burning, but if the field has been left without mulching in order to get early berries we go

over the field with the Planet Jr. harrow and fine the top about one or two inches deep, breaking up the crust and mellowing the soil, and if it comes on dry we go over it two or three times. I am aware that many growers do not believe in spring cultivation, because it disturbs the roots at a time when every root is needed to perfect the fruit, but you must not go deep enough to seriously affect roots. It pays.

Hoeing.

It is strange some people can never learn to use a hoe. They step every time the hoe moves, hoe up and tread down, chopping into the roots of the plant, leaving the ground in great holes, chunks and hummocks, killing few weeds and doing more damage than they do good. They hoe twice as much in one place as they should, leaving other places untouched. They belong to the brigade who cultivate for forty bushels per acre. They never commence their work till the weeds are well up and established, when they pull them up from around the plant, almost if not quite destroying it, doing several times as much work as they should; are always poor and behind time with their work. They live in poor surroundings and play second to everybody. They growl and whine because their plants don't grow and turn green with envy at the

Skillful Man

who uses a light, thin hoe only moderately sharp so as to pull the weeds out by the roots, killing them instead of cutting them off when they will at once start up and grow again. He knows the roots of plants can't grow and thrive in a hard lump of soil and he has the knack of giving his hoe a scuff that knocks the lumps all to pieces and leaves every small weed exposed to the sun to die, leaving the ground all covered with fine earth to retain the moisture and as level as if the work had been done with a planer, and larger weeds all out in the middle of the row so if they happen to have rain to revive them the cultivator will kill them. One such hoeing generally does for the season. He never injures the plants by leaving their leaves covered with dirt or their roots by working too deeply close to the plant. He never leaves a hard spot not mellowed up so the air can get to the roots and knows that if he strikes his hoe into the ground and leaves a

clean cut exposed to the sun during a drouth it will quickly dry up and injure his plants. He takes pleasure in his work and delights to see the dark green foliage of his thrifty plants and treats them as tenderly and lovingly as if they were his own children. He belongs to the four hundred bushel battalion and sells his fruit for enough more per quart to pay for all the labor done. He soon lives in a fine house, surrounded by all the comforts of life and many of its luxuries, is contented and happy, envying no one, for he is at the head of the column and uses pedigree plants. My friend, do you catch on to this?

Garden Culture.

No one can appreciate strawberries so much as the person who grows them with his own hand. He has a different regard for them. They are more beautiful to him, larger and higher colored. If they are especially fine he will enjoy the envy of his neighbors.

You will need only good garden soil, rich in potash and phosphoric acid, which the wood in the kitchen stove will readily furnish. Don't get on too much of it, as you must remember it is caustic and should be applied after the plants are set, or in the fall before, taking care not to let any quantity come in contact with the crown of the plant. Then hoe it in and mix thoroughly with the soil. It should be sown broadcast and may be safely applied an eighth of an inch deep, and if on light sand considerably more.

Let rows be two feet apart and plants one foot apart in the row. The long trusses loaded with the berries fall over into the walk for a considerable distance, and allowance should be made for this. Pick all blossoms off the first year, mulch and burn as directed elsewhere. You will be surprised at the amount of fruit you can grow with even a dozen plants, and a hundred will supply a large family. They make a fine flower bed in the spring, and the pleasure of watching them grow and seeing the fruit coming on until finally the ground is covered with the great red beauties, is a rich compensation for plants and work, so you get the fruit "free gratis for nothing."

The cause of failure on the part of

Farmers, Mechanics,

and business men who attempt to grow berries

for their own table, will be found in the fact that almost invariably they go to a neighbors and dig up plants out of an old bed and thereby lose not only their labor and money invested, but the enjoyment of having their table supplied with the *king of all fruits*.

Well might Henry Ward Beecher exclaim, "Doubtless God might have made something better than the strawberry, but doubtless God never did," but to enjoy it in its fullness we must feast the eye as well as the palate and see the delicious beauties lying on the ground in *great windrows*.

There is great enjoyment in expectation, hence the pleasure of gardening and seeing the good things coming on.

CUTTING RUNNERS.

If you want very large, rich, high-colored fruit, set in rows three feet apart and one foot apart in the row and cut off every runner as soon as it appears, and give thorough cultivation and you will get what you are working for.

Every time you cut off a runner a new crown will generally form and that means an additional fruit stem. All the runners you let root and afterwards cut off is just that much thrown away. If your ground is very rich and carefully cultivated so as to allow no check in growth it is not at all difficult to grow a plant larger than a half-bushel, and they have been grown as large as a bushel basket. Such a plant ought to yield from two to four quarts of magnificent fruit.

The Amateur

who takes great pleasure in the beautiful will delight in cultivating in this way. He can feast his eyes and palate and astonish his neighbors to his heart's content, but the grower who has "bread and butter" as the chief object in view will hardly find the market

Sufficiently Educated

to justify all this additional expense. There is a happy medium. You will get almost as large fruit and very much more of it by setting plants about eighteen inches apart and then allowing about five runners to take root, placing them somewhat in this shape: Let "A" represent the mother plant and "b" the runner allowed to take root:

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b b b b b b b b b b b b b
b A b A b A b A b A b A b
b b b b b b b b b b b b b

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the outside plants being at least eight inches from the mother plant. All the plants will be about eight inches apart. New runners will now form but a narrow garden hoe will chop them off pretty fast after you have taken the Planet Jr. lawn edger and removed the "plow" and run along each side. This is the finest thing I have ever seen for the purpose. It is the

Greatest Mistake

to let plants form too thick. You have no right to expect a big crop of berries with a plant on every square inch.

Our practice is to chop them out as evenly as we can with a narrow garden hoe and then go over them rapidly after having used the Planet Jr. runner cutter, and pull them out as you would weeds. If they by chance get thrown around by the cultivator so as to make them too thick they should be given a very quick jerk when they will break without injuring the plants to be left; of course it involves considerable work, but it pays largely. A man can get over a good deal of ground in a day. Plants must have light and air as well as room for roots to feed in. The roots of a vigorous plant go out from one to two feet in search of food. Give them a chance.

MULCH AND FIRE.

Nothing pays better one year with another. Marsh hay is the best but difficult to obtain in all localities. We generally use straw and do not pay much attention to weed seed except it be timothy. We apply several inches thick as soon as ground is frozen so we can drive on with a team and when freezing is over in the spring rake from immediately over the plants so they can come up through and do not disturb it further till after picking is done. It keeps the berries clean, the ground moist and the pickers appreciate it. Then run the mowing machine over the row cutting as close as possible, and after letting the leaves dry a day or so stir out the straw putting a good allowance directly on the row and when the wind is favorable apply the match, and burn insects, fungi and weeds black as tar. Don't imagine your

through to the close of the season a bonus of $\frac{1}{4}$ cent is added to each quart they have picked. This evens up the good and bad picking and gives the *best satisfaction*.

The rules are printed and placed up in the packing house and all understand them. If paid in full every day or week it is very difficult to control them, and you never know who you can depend on to do your work.

Rows are Numbered

by placing a stake in the center of each row with a square board nailed on and figures large enough to be seen from every part of the field and when a picker commences on a row the number is put opposite their name in the overseers' book. So if a plant is injured or berries not picked clean we can tell any time who did it.

Pickers Sometimes Get Lazy

when near the end of the row and not immediately under the superintendent's eye. If they know they can't do mischief without being caught at it, they are generally *very good*. If you can once get pickers accustomed to work without talking they will get on faster and better and much of the personal bickering will be dispensed with. A loud mouthed boy or girl who is always finding fault is a nuisance and is discharged at once.

THE PICNIC.

We always celebrate the close of the berry season. We clip the following from the Ionia Daily Standard:

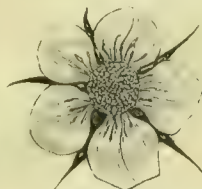
"The picnic of the Rushire berry pickers at Woodard Lake Wednesday was a marked success. Mr. Kellogg says that he enjoyed himself immensely in the company of the boys and girls who had served him so faithfully during the season in the field. The fact that Mr. Kellogg gives steady employment at good wages all through the school vacation enables him to command the very best help in picking his berries. A strict discipline is maintained in the field, and not an improper word or act permitted, all being under the watchful eye of an efficient superintendent. Mr. Kellogg is himself a student of horticulture, always on the alert for every improvement that will

enable him to place his fruit on the market in the best possible shape, which accounts for the fact that while other growers are hunting for a market, his products are nearly always sold long in advance."

How to Eat Strawberries.

The very height of strawberry-eating is with coffee. Nobody ever really tasted coffee who has not drunk it in alternate mouthfuls with strawberries, and nobody knows the strawberry flavor excepting immediately after the clearing of the taste which comes from drinking coffee. The clearing property of coffee is familiar enough, but there is strange ignorance of this special application of it. The best of strawberries with the best of coffee make the supreme refinement of indulgence in the fruit. — N. Y. Post.

PISTILLATE VARIETIES.



STAMINATE.
OR PERFECT FLOWER.



PISTILLATE.
OR IMPERFECT FLOWER.

are designated by a letter "P," and a staminate variety or bi-sexual by "B," must be planted every third or fourth row to furnish pollen, or you will get very little or no fruit. The variety selected to furnish pollen should bloom a little earlier than the pistillate.

PERFECT AND IMPERFECT FLOWERING VARIETIES COMPARED.

The following was the result of a test at the Ohio Agricultural Experiment Station, made under the direction of Prof. W. J. Green:

A list comprising eight each of the leading perfect and imperfect flowered varieties of strawberries was sent to several prominent strawberry growers, requesting them to mark the different varieties as to productiveness on a scale of 0 to 10. The averages agree very closely with the grades given at the Station before the lists were sent out. Below are the average for each variety and for the two classes:

PERFECT FLOWERED VARIETIES.

Sharpless, average	4.1
Cumberland, average	5.4
Wilson, average	6.6
Sucker State, average	6.0
Jessie, average	4.5
Pearl, average	7.6
Gandy, average	4.8
Capt. Jack, average	7.6
Average	5.8

IMPERFECT FLOWERING VARIETIES.

Crescent, average	9.2
Haverland, average	9.8
Bubach, average	8.2
Warfield	9.0
Ohio	5.0
Champion	7.0
Eureka	8.0
Manchester	7.8
Average	8.0

It will be understood that these grades are not based on actual yields, but are simply careful estimates, yet it is not improbable that they represent the standing of the varieties quite closely. One thing is clear the most prolific varieties are found among those having imperfect flowers. Nearly all those named in this class are very fruitful, the Ohio being the only exception.

Among those having perfect flowers none are found that are extremely prolific, the Wilson and Capt. Jack being possible exceptions under favorable conditions. Taking the average for the two classes we find that the varieties having imperfect flowers stand thirty-eight per cent higher than those having perfect flowers.

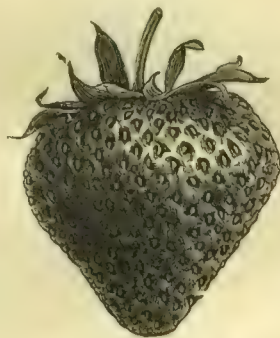
If we take four of the most prolific in each class the imperfect flowered sorts stand thirty per cent higher than those having perfect flowers.

There can be no doubt that the production of pollen is an exhaustive process, hence the varieties having perfect flowers are at a disadvantage. No doubt some of the perfect flowered sorts are very nearly equal to any in fruitfulness and under certain circumstances may be fully equal, but the chances are against them when unfavorable conditions occur. Given two varieties of equal vigor and productiveness, one having perfect the other imperfect flowers, the extra tax of pollen bearing on one will so weaken the plants as to render them more subject to the evil effects of fungi, insects, dry weather, frost, etc., than those that produce no

pollen. There can hardly be a question that the best market varieties at the present time have imperfect flowers. This is not alone because of the greater fruitfulness of varieties of this class than those having perfect flowers, but because of more general reliability—that is, they more uniformly produce good crops. In many respects it may be desirable to have varieties of perfect flowers only, but it is probable that future development will be along the line of still greater specialization. The highest development of fruit bearing qualities in one class and of pollen bearing in the other gives promise of greater reward than to combine the two functions in one variety.

VARIETIES OF STRAWBERRIES.

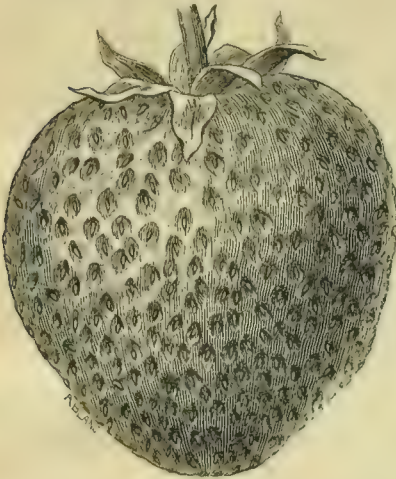
Among the best perfect flowering varieties and for an all-purpose berry, we unhesitatingly place the



OLD WILSON'S ALBANY

at the head of the list. It is entitled to this place because it has done more to popularize strawberry growing than any other berry. I admit there are others of a larger size and that many people prefer on account of the acidity of the Wilson, yet there are none equal to it in shipping and keeping qualities. All dealers prefer to handle it, and many of our customers demand it. As stated elsewhere you will find where it has failed that plants have frequently been taken from old beds, and no care has been exercised to maintain its vigor. As with all other varieties there are some essentials lacking in a few soils where it will not succeed, but it has a brilliant record over a wide area of country. It blooms early and persistently throughout the whole season, and is so strong in pollen that it has few equals in fertilizing imperfect flowering varieties.

THE BEAUTIFUL EUREKA (P.)

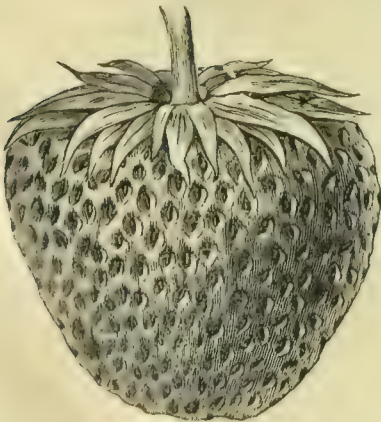


is surely a great berry, and one of my favorites. Its fruit is very large, and plenty of it, of better quality than Bubach, and better form and color, and should be in every garden. It should be fertilized with Gandy, as it is a late variety.

MIDDLEFIELD (P.)

is a new berry, making friends very fast everywhere. Large, beautiful fruit, heart-shaped and quite regular. The flesh is moderately firm and quite good flavor.

CRAWFORD (B.)



The plant is large, stocky, dark green, free from rust, and healthy. The fruit is very large, and is never cockscombed or misshap-

ened, and a heavy bearer. It would puzzle an expert to point out a fault in fruit or plant.

GREAT PACIFIC (P.).

I have not fruited it yet, but so many good things are said of it that I regard it as very promising. It is certainly a strong grower.

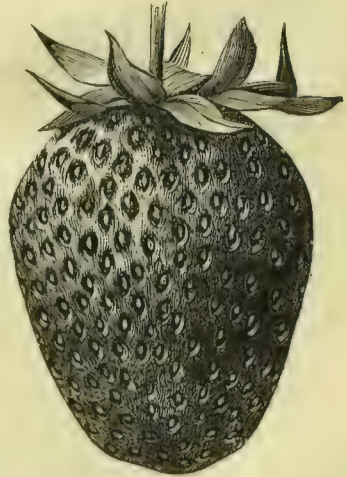
BEDERWOOD (B.)

is also among the most promising new early varieties. There is no defect of plant or growth, and is highly praised all over the land. I have not fruited it.

PEARL (B.)

is a fine berry and the best canning berry grown. It is very beautiful and firm after being canned and retains its color in full. It has a slight tendency to rust but does not seem to injure it. I find it one of the most productive of the perfect flowering sorts.

HAVERLAND (P.)



No other berry ever became so well established everywhere as a leading variety in so short a time. Like the Crescent, it does well almost everywhere and seems to be fully equal to it in productiveness and excels it in size. The berries are very uniform. Rather soft for long shipments, but for a near market it is simply immense. You will not make a mistake in setting largely of this.

(JEWELL P.)

makes so few runners that it is hard to propagate it, yet when we do get plants, planted in

rich, deep soil, and given the highest culture they make wondrous big hills and produce *enormous crops of very large berries*, of deep glossy scarlet color, that make a most attractive appearance on the table or in the market; is of little value on light, sandy soil.

PARKER EARLE (B.)

is making a magnificent record and will take high rank as a market berry. Good reports come from every quarter and plants are likely to be very scarce for a long time to come. It is bi-sexual, plants dark green, fruit very large, fine flavor and of beautiful color.

BUBACH (P.)

now ranks as a standard variety. Not quite so productive as the Haverland. The berries are very large and are classed with "show berries." They are very beautiful.

THE ENHANCE (B.)

is a perfect flowering sort of the greatest promise. The fruit is dark red and fine flavor, from large to very large. It seems to have great power to resist frost. The fact that it is very strong in pollen will make it valuable as a fertilizer for pistillate sorts.

GANDY (B.)



is a prize indeed. It is surely the best very late variety. We picked fine large berries as late as July 18. It has a perfect flower, blooms very late and enables one to hold the market

when all other varieties have begun to run small.

THE JESSIE (B.)

is perfect flowering and better than the Sharpless. It resembles that variety somewhat, is very vigorous and healthy and worthy of general planting.

WARFIELD (P.)



is the coming berry for market. It is certainly as productive and of better quality and larger than the Crescent and will more than likely supersede that old favorite inasmuch as it "stands up" in the boxes better and is the best canning berry if we except the Pearl. Nothing but highest praise comes from all parts of the country.

MITCHEL'S EARLY (B.)

is being planted largely on account of extreme earliness, as it is certainly eight or ten days ahead of Crescent and Wilson. It is very strong in pollen and hence valuable as a fertilizer. It is very vigorous and makes more runners than any other variety I know of and must not be allowed to mat too thick or you get no fruit. I do not believe it is as productive as many others but has the market and big prices as it is ahead of all others in earliness.

THE DAYTON (B.)

We are glad of the opportunity to assist in the introduction of this grand new berry, now first offered to the public. Yet it is not a new, untried variety, but has had several years of thorough trial, and a verdict has been rendered by several leading horticulturists as well as by

many living in the vicinity of its home, near Dayton, Ohio, who have seen it in bearing and eaten the fruit; that it excels in Earliness, Hardiness, Large Size, Productiveness, Superior Quality, Perfect Bloom, Good Shipping qualities, Desirable Color, Vigorous Growth, and its Entire Freedom from Rust, always producing bright, clean, healthy foliage. It equals if not exceeds, the Crescent in yield, is larger and more uniform in size, darker in color, better shipper, perfect blossom. Certainly its many superior points commend it to planters.

THE CRESCENT (P.)

has probably made more money for fruit-growers than any other variety. It is rather light color and not quite firm enough, yet it looks very beautiful in boxes. It has a strong competitor in Warfield, and I am disposed to give that variety the preference.

CUMBERLAND (B.)

is a beautiful berry but too light color and too soft. The sun quickly fades it out after being picked and a weakness of such a character is difficult to improve by selection and so we have discarded it.

SHARPLESS (B.)

is the largest berry grown and about the most unreliable. It seems to bring its blossoms out nearly all at once so high above the foliage and is so very tender that the least frost kills them all. We do not grow it.

Shall Farmers Grow Berries.

Concerning the question, Which is best for the farmer—to grow or buy small fruits, Mr. Van Alstyne at the Albion, N. Y., farmers' institute, said: "The trouble is the farmer doesn't buy them; he says he can buy them more cheaply than he can raise them; but, somehow, he never has any. If he does buy any, it is but few. On the other hand, if he grows and cares for them, he will have a sufficiency. As a rule, the man in the city or village who must buy his fruit, has much more of it on his table than does the average farmer, who should and can, if he will, raise all he needs of all varieties and have them in succession during the entire season and plenty of them in cans for winter use. Those farmers who tell you how much more cheaply they can buy these fruits, never buy any, and if any are

found on their tables, it is because the mother and children have been skirmishing over the fields, through the woods and along the fences and roads, in the boiling sun, and picked them. That is about the way these 'buy cheaper' farmers usually 'buy' (?) their supply of these fruits."

RASPBERRIES.

All that has been said in these pages in regard to seminal exhaustion and consequent degeneration of strawberries applies with increased force to raspberries, blackberries and grapes.

We assert that plants taken from a fruiting bed which has been allowed to overbear and become exhausted will transmit their weakness through several generations.

The Pruning

should be done very closely, the branches being left not over two or three inches long and after the fruit is set if the field is to be used for propagating purposes it should be gone over and all plants overloaded cut off so that it shall not overbear. You will get almost as many quarts and they will sell for enough more to make up the difference. As in the case with strawberries it is the formation of seeds that causes exhaustion.



(HOW TO PRUNE BLACKCAPS.)

A TEST.

Take the largest and most thrifty stool of blackcaps you can find, mark it with a stake, let it stand and fruit heavily without pruning

two seasons, then take plants from it and set them among plants propagated as recommended and mark the difference. If your experiment corresponds with mine you will *each year* get a very light crop as compared with the first method. At the end of three years you will find the plant left unpruned about run out. If properly pruned they should last from six to eight years. It is not profitable to let them run too long. Plants should never be taken from a bed more than three years old if it has not been kept very closely pruned.

Some growers for evaporating purposes prune just as little as possible because it is the seeds that count in making pounds of dried fruit.

NURSERYMEN

frequently contract with these parties for a supply of plants to fill orders hence the large number of failures in raspberry growing.

Blackcaps are *propagated* by tips. Immediately after fruiting, cut out with a light steel hook all the old wood and remove it, then cultivate as deeply as the roots will permit and get the ground as fine and mellow as possible. Go over it several times if necessary for it is of the utmost importance, if fine large plants are to be grown. With a short handled hoe strike in the ground and insert the tip about three or four inches deep leaving it pointing straight down so it will not grow out again. Press the soil sufficiently firm to hold it. You will need to go over the field at short intervals and bury the growing canes so the wind will not thresh them about.

THE SOIL

should not be as rich in nitrogen as for strawberries, but should contain an abundance of potash (wood ashes). The same rule for the preparation of the soil for strawberries applies for raspberries.

SETTING THE PLANTS.

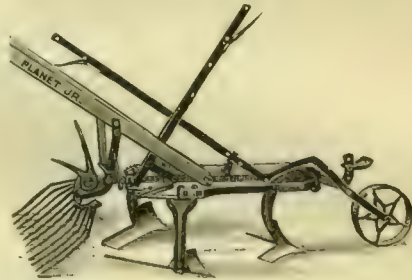
We plow a furrow five or six inches deep, straight as an arrow, about seven feet apart and set two and a half feet in the row and they will support each other. If set at this distance only three or four canes should be allowed to grow.

PINCHING TIPS.

As soon as they are thirty inches high pinch off the terminal buds of new canes and strong laterals will be thrown out and make it self supporting. We only pinch once as sufficient branches will be made.

The Root

close to the surface, but if set deep and cultivation is deep at first they will root deeply. If they have shallow cultivation at first and the cultivator is then allowed to run deep you will tear the roots and greatly injure the plants. We always set pretty deep and keep the ground mellow with the Planet Jr. They never dry up and ripen their wood nicely.



The Planet Jr. Manufacturing Company, of Philadelphia, manufacture one of the finest tools I have ever seen for cultivating in raspberries, blackberries or grapes. The teeth are so arranged as to lift up and aerify the soil, and the fineing attachment at the rear breaks up every lump and leaves it perfectly level to act as a mulch and at the same time cuts off every sucker or large weed which is an exceedingly difficult thing to do with the ordinary cultivator teeth. These teeth never dive down into the roots. It is so easily adjusted either as to width or depth, it being done instantly by a lever right by the hand.

Few people realize how much time a man will use in changing his tools to work to a nicety by the old method of loosing and tightening bolts. The Planet people seem to be far ahead of all other manufacturers in this respect. We bought our tools in the open market and have no interest in their business. We have simply inserted these engravings in order to place before fruit growers the best tools to accomplish the work the quickest and best possible way.

VARIETIES.

Of the thoroughly tested varieties of blackcaps we place at the head

JOHNSON'S SWEET,

as the richest and sweetest blackcap in existence. Entirely hardy and very productive. Berries nearly as large as Gregg, and ripens very soon after the Souhegan. Berry pickers and customers go for it immensely. You can surely hold your customers against all comers. It should have a place in every garden.

EARHART.

Everbearing. This is a remarkable berry. J. W. Sarff tells Messrs. Hale: "You may say, over my name, that the first crop of Earhart is equal in yield to Doolittle, Mammoth Cluster, or any of the leading sorts, and the after-crop continues from July to freezing in the fall, and is equal to twice that of the first crop. If the old wood was cut to the ground in the spring, you could safely count on a full crop from the new canes. I saw picked off two rows, six to eight rods long, sixteen quarts nice berries at one picking, at one time, about the first of September, and they sold for just double the price that blackcaps sold for when the main crop was ripe.



JOHNSON'S SWEET.

WINONA.

A variety now first offered, although it has been tested for eight years. This is very likely to become a strong competitor of the Palmer, as it ripens at the same season. The introducer says: "The canes are of the largest size, stand firm and erect making, without any exception,

the most perfect stool of any variety. It has never shown the least signs of blight or disease, perfectly hardy; no cold in eight years has injured it in the least. It ranks first in withstanding drouth. It ripens very early; fruit large size, glossy, jet black color, best quality. As a shipper it is not excelled.

SOUHEGAN,

the earliest of all black-caps and the finest and best of the early varieties. It is very productive and perfectly hardy. Generally ripens here the last of June or first of July.

MIAMI

and OHIO are the same. They follow Souhegan and are the largest yielders of any of the black caps and a splendid all around berry. *If you plant but one, plant this.* For evaporating it has no equal. I never saw or heard of its being injured by cold.

GREGG

is the largest and finest of the late varieties. We have frequently found them in the boxes nearly an inch in diameter. It is not quite so hardy as the others but we have never lost a crop. The berries, to have their best flavor, should be allowed to get fully ripe.

THE PALMER

is a new variety entering the market as a competitor for the place held by the Souhegan. If it proves superior it will be a great acquisition indeed.

SHAFFER'S COLOSSAL

is a hybrid. Crossed between the red and black, of a dull purple color, of immense size and rich sub-acid flavor, very productive and the best canning or evaporating berry grown. Too soft for shipment and the color for market is against it. If it had the color and firmness of the Cuthbert it would take the highest rank.

RED RASPBERRIES.

Red raspberries are propagated by root cuttings and suckers. The best plants are grown by mowing off the old canes in the spring, thus



THE SOUHEGAN.

giving the suckers the full strength of the roots. Unlike blackberries, roots will emit on all sides and make good plants. We do not pinch the young canes of red raspberries but let them grow at will and in spring pruning cut off about one-third of the cane. We hold the

Hansell



to be the best thoroughly tested extra early

variety. The soil should be quite rich and it will yield heavily of fine large, firm, bright-colored berries that can be shipped to any part of the country. They ripen a little before Souhegan.

THE CRIMSON BEAUTY

is a beauty in every respect. It is nearly a pistillate and does not do well unless set near Hansell or some perfect flowering variety. The canes are large and vigorous and very productive, following close after Hansell.

THE CUTHBERT



is called the queen of the market. Berries very large and firm, of bright red color and of great beauty. One of the best shippers, and in every respect the best late red berry grown. Our main crop is of this variety. There is some complaint about tenderness, but we have never lost a crop.

GOLDEN QUEEN

is undoubtedly a sport of the Cuthbert and a magnificent berry. It is of a bright yellow

color and in flavor and growth the same as Cuthbert. It is one of the most beautiful of all fruits in the can.

BLACKBERRIES

are among the most profitable of all the small fruits grown if properly managed, and yet there are more failures with this berry than any other kind. They find a ready market at all times. Indeed, I do not believe there is a village or city except in the north woods properly supplied with this luscious fruit.

The wild berries are fast disappearing and even now are confined almost wholly to the north woods. It has its season and there is no other fruit to take its place. I have never sold them for less than raspberries, and they will produce nearly double the amount per acre.

CAUSE OF FAILURE

arises more generally by going into an old patch and digging up suckers and old plants than from any other cause. Occasionally a sucker may be found that will answer the purpose very well, but in nine times out of ten they will never make proper roots. The roots frequently start on one side or one long root starts out as the main feeder, sometimes running twenty or thirty feet. The sap from the feeding roots having to flow through this long root are continually throwing up suckers and absorbing the strength of the plant to the exclusion of fruit.

THE PROFITABLE WAY

is to plant only root cuttings taken from selected canes bearing the heaviest crops of



CRIMSON BEAUTY.

large and fine berries. Cut these roots into pieces of the proper length in the fall and put them through a callousing process for several months so they will emit fine roots from every part, plant them in nursery rows and in the fall take up the plants again, shorten the roots to the proper length and put them through a second callousing process so that roots will start from both sides and ends of every root. Set them for fruiting and at the end of the year if you will dig up the plant you will find every inch of the ground fully occupied with a mass of fibrous roots close to the main bush. Plants treated in this way will surely yield double the crop of those grown from suckers and will last more than twice as long, and the fruit will be double in size and much sweeter and richer, besides the unmitigated nuisance of suckers will be largely avoided. Blackberries prefer a rather heavy soil, but will do well on any land if properly fertilized.

WOOD ASHES

are the great fertilizer and should be applied liberally. On sandy land they may be sown broadcast at from fifty to seventy-five bushels per acre, and should be applied broadcast between the rows every two or three years to secure the best results. They require but little nitrogen.

The ground should be deeply worked before setting the plants. The rows should be seven to eight feet apart and three feet apart in the row, giving ample room to keep the ground mellow, which is the great secret in preventing the ground from drying up. Don't let a sucker grow outside of the straight row, so it will remain only one plant wide, then the cultivator can do nearly all the work. Never take a sucker out of a bearing plantation for planting. By so doing you cut and mangle the roots, thus weakening the canes, besides it causes them to send up innumerable suckers and you will soon find your plantation rapidly failing. Prune pretty closely and the berries will be enough larger, richer and finer to more than compensate for the number cut off.

As soon as the new canes get to be two feet high pinch of the terminal bud and they will throw out laterals and become strong and stocky, needing no stakes or other support.

Don't pick them oftener than twice per week, as they are not ripe until they have been fully

black for two or three days. A green blackberry isn't the sweetest thing on earth.

Strawberries or most any crop can be planted between the rows the first season. Keep the cultivator going. Blackberries root deep especially if the ground is stirred deeply the first year.

In a dry time cultivate after each picking just at night so the cold soil brought in contact with the warm air will condense the moisture of the atmosphere. Few people realize the importance of this in working all farm crops.

VARIETIES.

From the long list we select the following, which we believe are of the greatest merit.

THE MINNEWASKA



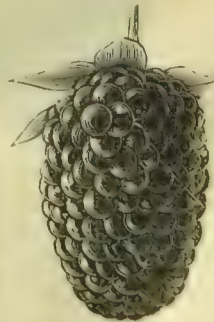
has not been fully tested here, but reports from all quarters are very flattering. It is reported perfectly hardy, enormously productive, extra large, fine fruit, ripening extremely early. If further test proves this it will be a great acquisition.

STONE'S HARDY

ripens about the same time as the Taylor. It is not so hardy nor is it so large and of good flavor. I am not propagating or fruiting it only in a small way, as it is certainly inferior to Triumph or Taylor.

TAYLOR'S PROLIFIC,

which is a late variety and has the sweetest and richest flavor of all blackberries under cultivation. It follows the Triumph, and continues to ripen until early grapes are ripe, thus making a continuous market.



THE WILSON, JR.,

and Early Wilson are nearly identical. They

are largely cultivated on the lake shore, but are tender and would require protection away from the lake.

For general cultivation we have never found any variety that would equal the

WESTERN TRIUMPH,

and this has been for fourteen years our main reliance. Indeed, we have never failed to get a profitable crop. It is the hardiest of any variety with which I am acquainted and stands the Michigan winters like a scrub oak. Its fruit is large and sweet and free from the hard core found in so many varieties. I have never seen a bush affected with rust or any disease. It ripens very early, long before wild berries are on the market.

KITTATINNY

rusts and is tender as is also the Lawton and some others of its class. I have set them aside.

SNYDER

is too small. Its great forte has always been its hardiness, but I have found it so inferior to the Triumph that, as a field berry, I have discarded it.

THE ERIE.

I am not yet ready to express an opinion as to its value. It is certainly very promising. I must first fruit it from select canes and eliminate its weak points, if it has any.



DEWBERRIES.

The *Lucetia* is far ahead of any other variety with which we are acquainted. It is a trailing blackberry of immense size, and when properly pruned is enormously productive and of excellent quality. It does not require land rich in nitrogen, but plenty of potash and phosphoric acid in the way of wood ashes will greatly benefit it. It should be pruned to three or four



WESTERN TRIUMPH.

canes and cut back to two or three feet, and if foliage becomes too rank it should be shortened in.

The adverse criticism of this plant always comes from those who have given it no care. Proper cultivation and pruning are as essential with this as in the case of raspberries and blackberries, and the work is as easily done. The fruit must be allowed to become fully ripe. Its good qualities may be summed up as follows: Earliness, productiveness, good quality and ease of affording winter protection if planted in an exposed place. Every family should have this in their collection. It is as hardy as Lawton blackberry and passes most



winters without injury, but it pays to give it a little protection, which reduces a big crop to a certainty.

CURRENTS.

Only a few years ago every family had a bountiful supply of this cooling and delicious fruit. It grew with the least possible trouble in any neglected spot and gave rich returns for the care bestowed upon it. The currant leaf worm made its appearance and people did not know how to fight it, bushes all died. We now find a little white hellebore dusted on when the leaves are damp, or a tablespoonful mixed in a pailful of water and sprinkled on the bushes with a whisk broom as soon as leaves appear in the spring, repeating once or twice, and we can grow them as of old. To get the best results

The Soil

should be very rich, and weeds and grass kept out and the ground frequently stirred to conserve moisture. If they can have a heavy application of rotten chips they will greatly appreciate it, or a mulching of any kind of coarse manure is good.

Varieties.

The Fay Prolific is recognized as the greatest acquisition in currants since their introduction as a desirable fruit. Although it has been before the country for several years the demand far exceeds the supply. The clusters and berries are all that can be desired.

The Cherry is a large prolific currant of fine quality, and is more largely planted for profit than any other of the old sorts.

Victoria is a large late red and very fine. Bunches long and very prolific.

Red Dutch is the old stand-by and an immense yielder. The clusters are not quite so large as the cherry, but there is plenty of them.



THE GOOSEBERRY.



THE DOWNING.

Oh, my! just to think of the gooseberry pie. No community has all they want; no town is a quarter supplied, and yet it is one of the most productive of all fruits. It's just as easy to grow as the currant and the currant worm loves it just as much but he can be disposed of readily in the same way. Keep the bush well pruned and

open and the soil very rich and you have them. The best variety is the

Downing,

which is enormously productive and very free from mildew, being a native seedling, and forms a large and handsome bush. It is generally accepted as the best in nearly all respects.

Smith's Improved

is a large, pale yellow, good quality and excessively productive, requires good, clean culture and mulching.

Houghton.

Berries, not very large, but an immense number of them. It is pale red and adheres to the bush so you can choose your time in picking it.

THE VINEYARD.

Of all the fruit that grows there is none more beautiful and tempting than the grape, with its great rich clusters hidden away in the cool shade of its dense foliage. They are so easy to grow and afford so much pleasure for the labor expended that a

Business Man, Merchant or Farmer

should deny his family or the hired help an abundance of this luscious fruit comes close to the borders of cruelty.

A few vines and a very little care and the enjoyment is yours.

The Great Point

is to have cuttings taken from strong and vigorous vines that have always been kept properly pruned. We have already stated that cuttings taken from exhausted vines will not fruit as heavily as those from canes which have never been allowed to overbear. Not more than two or three clusters should be permitted to ripen on a three year old vine and eight to twelve on a four year old cane. You will demonstrate great skill if you succeed in restoring full vigor to a vine allowed to bear all it sets during the first three or four years of its life. I do not believe any one ever succeeded in performing that feat.

The Soil

should be rather dry and neither the stiffest clay nor lightest sand. Good corn and potato land will do. It delights in warm sunshine for foliage and shade for its fruit.

Fertilizing

should consist largely of ground bone and wood ashes, or *very thoroughly* rotted stable manure which *must not* be brought in direct contact with the roots. Never use rank unfermented manure under any circumstances. If the ground is in fair fertility about three or four hundred pounds of bone and from twenty to fifty bushels of unleached wood ashes per acre

will do the business. They should be cultivated in and thoroughly incorporated with the soil. I give a dressing of ashes every year. I am satisfied it gives richer flavor to fruit and ripens the wood much better.

Preparing the Ground.

The ground should be plowed as deep and made as fine and mellow as possible. Some people dig holes two feet deep and four or five feet across and fill them up with rich top soil to within a few inches of the top of the ground and then set the vine and afterwards fill full. If the soil is porous or quite sandy, so the water will settle away quickly, this is precisely the *right* thing to do. But if you have a firm soil, a stiff clay, it is precisely the *wrong* thing to do; the water will soak into the soft earth and hold it there like a tub and destroy the vigor of the vine. In the latter case break up the ground as deeply as possible and set the vine not too deep. The roots should be shortened to from twelve to fifteen inches in length and straightened out in every direction, care being taken that they do not cross each other. The soil should be firmed around the roots and kept mellow by frequent cultivation.

Never put any manure in the hill when setting. Manure seems to be rank poison to a young grape root. More vines die from this than any other cause. *Don't do it.* Never mulch a grape vine. The soil should be warm where the roots are feeding.

The vines may grow as they please the first year, but the second year must be staked or trellised and pruned to three buds; after they start rub off all but the strongest one. We prefer strong, well rooted one year old vines.

Pruning.

There are a great many ways of doing this, but we give the one we use and believe it to be the best. Bear in mind that fruit grows on the present year's growth from canes of last year's growth. Very rarely a fruiting bud is found on an old cane.

The Trellis.

We use what is known as the *Kniffen system*. Two wires are used; the lower one not less than three and one-half feet from the ground and the second fully two feet above the first. The vine is allowed four arms, each extending two to four feet out on each wire. Then prune each lateral back to from one to three buds, leaving in all not more than from twenty to forty buds, according to the vigor of the vine, and then the grapes should be thinned soon after the fruit sets so as not to leave more than thirty to forty clusters. The clusters will be larger and better flavor and ripen much earlier. A strong, healthy vine will always set more fruit than it can ripen and the following year will be weaker, so that close pruning and thinning one year with another is the only way to secure continued



large crops. If the vines are to be used for propagating they should not be allowed to bear over one-third the above in any year.

It is a Great Mistake

to train the vine so low as to densely shade the ground. It invites mildew and rot. They delight in sunshine and plenty of dry air.

Summer Pruning.

I believe in it and practice it. If a large number of buds start out close together rub them off soon after they start so as to leave the proper number. After the fruit has set and vines extended about two feet beyond the last clusters, take a piece of an old scythe, having a cloth wrapped around to make a handle, pass along the row quickly, cutting off the extreme end of the growing vines. They will now throw out laterals which should again be shortened in and the leaves are seen to grow much larger and forced to remain *near the fruit*. Cut off only the extreme end. The leaves are the lungs of the plant which do the breathing. No one ever saw a prize cluster of grapes that did not have a very large leaf directly opposite the stem. Summer pruning

does not consist in cutting off the leaves. The vine, if left to itself, will grow and carry its leaves ten or fifteen feet away from its fruit. This is wrong; keep them just as near the fruit as possible. The sun is liable to scald the fruit, and it should be protected by foliage. The first ripe clusters will nearly always be found in the shade. The leaves want sunlight and lots of it, so if possible have the rows run north and south.

Cultivate

frequently and nearly up to the time the fruit begins to color.

Don't let grass or weeds grow under the vines as a slight frost will injure them, when if clean they would escape unharmed.

VARIETIES OF GRAPES.

There are too many varieties that are not especially valuable. We describe a few of those we regard as the cream of the list.

Black Grapes.

It may be said the introduction of the *Concord* was the beginning of successful grape

culture in this country. It succeeds everywhere a grape can be grown. It is yet the leading market variety and too well known to need description, but in many localities is giving way to the

Worden, which I believe is the richest and sweetest black grape grown in this country. Perfectly hardy, fully as productive as Concord, larger berry and cluster, and a week or ten days earlier. They are all gone before Concord arrives.

Hosford's Mammoth, originated by Geo. Hosford of this city, is surely the largest and one of the finest hardy black grapes yet introduced. Many of the berries are a full inch in diameter, and clusters immense. It ripens with the Concord. It is a great acquisition and everyone should grow it.

Moore's Early is one of the best extra early grapes, ripening fully two weeks ahead of Concord. The berry is very large, entirely hardy and on rich soil very productive. It is generally all gone before Worden comes in.

Talman (or Champion) is a prolific and profitable extra early market grape, ripens about the time of Moore's Early. Flesh sweet, juicy, and a rank grower. Healthy, hardy and vigorous.

The Eaton, a large and magnificent grape, a seedling of the Concord and ripens about the same time. Much larger in berry and cluster and less foxy. Is perfectly hardy and very productive. Its great size will make it desirable for the market.

Red Grapes.

Wyoming Red. Vine very hardy, healthy and robust, with thick leathery foliage; color of berry, similar to Delaware, but brighter, being one of the most beautiful of the amber or red grapes, and in size nearly double that of Delaware; flesh, tender, juicy, sweet, with a strong native aroma; ripens before Delaware, and is a valuable market grape.

Moyer is comparatively new, and resembles the Delaware in many points; bunch and berry are a little larger; ripens about the same time.

Woodruff Red. A new grape of ironclad hardiness. A rank grower and very healthy. The fruit is large in bunch and berry, attractive, shouldered, sweet and of fair quality, but somewhat foxy. Does not crack nor drop from stem. Desirable as a market variety where many others fail.

Agawam has a fine large berry and bunch is of excellent quality, having a flavor peculiarly its own. It has been kept in good condition till February and even to April and is especially valuable for this purpose.

Delaware. The standard of all excellence in grapes. Ripens several days before the Concord. The bunch and berry are small, compact, flesh very juicy, very sweet and refreshing. Requires rich soil, good cultivation and close pruning.

Vergennes originated in Vermont and proves entirely hardy. It is of good size, fine quality, quite productive and a very late keeper. It's a grand home berry as well as for market.

White Grapes.

Moore's Diamond. New. Originated by Jacob Moore, of New York State, who also originated the Brighton. It is claimed to be a pure native, very vigorous and entirely free from mildew; very hardy and extremely prolific; bunches very large and compact, berry greenish white, tinged with yellow, about the size of Concord. In quality it is claimed to be superior to any other white grape of recent introduction, and ripens some three weeks before the Concord.

The Niagara is one of the most popular white grapes ever introduced. It is surely a great acquisition and is being more generally planted than any other. The clusters are of immense size and large berry, very productive, and the vine of iron-clad hardiness. Everyone should plant this grape; it will surely surprise you.

How to Eat Grapes.

The man who holds the grape between his thumb and finger and squeezes or shoots the pulp into his throat does not know how to enjoy fruit, and is not likely to appreciate the good qualities of a fine grape. Let the berries follow each other in the mouth in rapid succession until three or four are taken, while with each insertion the teeth are brought together upon the seeds without breaking them. The acid of the pulp is thus freed to mingle with saccharine juice next the skin and a slight manipulation by the tongue separates the seeds and skin from the delicious vinous juices; after this has tickled the palate skin and seeds may be ejected together. Close to the skin lies a large part of the good flavor of the grape.—*Rural New Yorker*.

IONIA

is a beautiful little city of six thousand inhabitants, situated on Grand River, at the crossing of the Detroit, Grand Haven & Milwaukee and the Detroit, Lansing and Northern railroads, with branch to Big Rapids; thus giving railroad facilities in five different directions. Its manufacturing interests are quite extensive. The Capital Wagon Works, with a capital of \$150,000.00, have been built within the past year and are now employing a large force of men. The Ionia Furniture Company has a capital of \$60,000.00 and extensive buildings equipped with the most perfect machinery known to the business. The Michigan Clothing Co., capital \$50,000.00, employs about 125 hands and does a large business, as well as the Ionia Overall Co., which employs about 40 hands. There are several other important factories. The State House of Correction and Asylum for Criminal Insane, and shops and round house of the D. L. & N. railroad give employment to a large force. There are two daily papers and three weeklies, four banks, and all the churches and school advantages enjoyed by any city in the state. The Poncher Business College affords advantages found in but few institutions of the kind, and during the coming year will make extensive improvements in the way of new buildings and complete fixtures for demonstrating the work. Ionia excels especially in fruit growing; few cities enjoy so bounteous a supply of all kinds throughout the entire season.

Hosford's

Mammoth Grape

A new and thoroughly tested grape of great value. It has an immense cluster, and many of the single grapes are fully an inch in diameter and of the most delicious flavor with few seeds, a tough, thin skin, is a good shipper, and always sells at double the price of the Concord in all markets.

The vine is very productive and vigorous and of iron clad hardiness, having been tested here for sixteen years. It is easily propagated by cuttings. It is now offered to the public at one dollar each, for strong two year old vines, and 50 cents each for second-class vines. Address,

GEO. HOSFORD

Ionia, Mich

I have fruited this grape and seen Mr. Hosford's vineyard, and have no hesitation in saying it is all he claims for it. Its a great acquisition.

R. M. KELLOGG.

The Rushire Fruit Farm

Which is now one of the largest general plantations of small fruits in the great fruit belt of Central Michigan, is located on the bluffs of Prairie Creek, three-fourths of a mile north-east of Ionia city limits. Its reputation

FOR FINE FRUITS

extends far and near and during all these years has never suffered a serious failure. Its soil is a deep rich loam underlaid with a clay subsoil which has a wonderful power of retaining moisture during protracted drouths. Its fertility is kept to the highest degree and contains the greatest variety of fruits, employing from twenty-five to forty pickers every day from the beginning of strawberries to close of blackberries. Its phenomenal success is very largely due to the fact that plants are never allowed a place that are not strong and vigorous and heavy fruiters.

Louche

BUSINESS COLLEGE

IONIA, MICH.,

Is complete in all appointments, and thorough in its work. Many of its graduates are holding lucrative and responsible positions. Tuition by the term or scholarship. Shorthand and Typewriting a specialty. Write for catalogue.

HORTICULTURAL PAPERS.

The American Gardening published by the Rural Publishing Company, Times Building, New York, is beyond all question the leading horticultural paper in America. It was recently consolidated with Popular Gardening and retained the best features of both. Published monthly, \$1.00 per year.

The Michigan Farmer published at Detroit, Mich., at \$1.00 per year, is the great agricultural paper of Michigan and gives the news and full discussions of all farm topics. It has a separate department for horticulture and allows nothing to escape which is of any value to fruit growers. It has a splendid household department, and no farmer or fruit grower is doing either himself or family justice who does not take it.

THE ALLEGAN GAZETTE published at Allegan, Mich., is the mouthpiece of all the fruit growers on the lake shore and contains a full account of all the different fruit societies doing in the great fruit belt of Michigan. Its editor is also secretary of the Mich. State Horticultural Society. It is a great sacrifice to lose all the practical information given off in the discussions at these meetings and spread before the people by this paper.

FARM, FIELD AND STOCKMAN, CHICAGO, ILL., is a great farm paper with special department for fruit growers. It catches all the good things. \$1 per year.

GREEN'S FRUIT GROWER, ROCHESTER, NEW YORK.
Published monthly, at 50 cents per year.

ORCHARD AND GARDEN, LITTLE SILVER, NEW JERSEY. Also an ably edited paper, and full of good things.

